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IN THE CLAIMS:

1. (Currently Amended) An imaging system comprising:
first means mounted on a mobile platform for receiving reflected beams ~~a beam~~ of electromagnetic energy;
second means for combining the reflected beams with reference beams to form a plurality of interference patterns ~~recording an image provided by said beam, said second means including means for continuously recording a relayed image of an aperture plane of said system; and~~
third means for motion compensating the plurality of interference patterns ~~said image for motion of said platform relative to an external reference and for recording the plurality of motion compensated interference patterns.~~
2. (Previously Presented) The invention of Claim 1 wherein said second means includes means for digitally storing holographic images.
3. (Currently Amended) The invention of Claim 2 wherein said holographic images ~~are image is an interference patterns pattern.~~
4. (Currently Amended) The invention of Claim 1 2 wherein said third ~~second~~ means includes ~~is~~ a camera.
5. (Currently Amended) The invention of Claim 1 2 wherein said third ~~second~~ means includes ~~is~~ a one-dimensional detector array.
6. (Currently Amended) The invention of Claim 1 2 wherein said third ~~second~~ means includes ~~is~~ a two-dimensional detector array.
7. (Currently Amended) The invention of Claim 1 [4] further including means for reading said ~~holographic~~ interference patterns ~~pattern.~~

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8. (Currently Amended) The invention of Claim 7 wherein said means for reading said interference patterns ~~pattern~~ includes means for performing a time delay integration.

9. (Currently Amended) The invention of Claim 1 ~~2~~ further including means for transmitting beams ~~a beam~~ from said platform to said target.

10. (Currently Amended) An imaging system comprising:
first means mounted on a moving platform for receiving reflected beams ~~a beam~~ of electromagnetic energy at a physical aperture of said imaging system;
second means for recording an intensity and phase interference patterns already formed ~~pattern~~ ~~provided~~ by said reflected beams and reference beams ~~beam~~, ~~said second means including means for continuously recording a relayed image of an aperture plane of said system; and~~

third means mounted on said platform for redirecting said interference patterns ~~beam~~ to said means for recording whereby the instantaneous location of said interference patterns ~~beam~~ on said recording medium is controlled to compensate for motion of said platform relative to an external reference over a predetermined time interval.

11. (Currently Amended) The invention of Claim 10 wherein said intensity and phase interference patterns ~~are pattern~~ ~~is a~~ holographic interference patterns ~~pattern~~.

12. (Currently Amended) The invention of Claim 11 further including means for transmitting beams ~~a beam~~ from said platform to said target.

13. (Original) The invention of Claim 12 wherein said first means includes a laser.

14. (Currently Amended) The invention of Claim 12 wherein said received beams ~~are reflections~~ ~~beam is a reflection~~ of said transmitted beams ~~beam~~ from said target.

15. (Currently Amended) The invention of Claim 14 further including means for providing a reference beams ~~beam~~.

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16. (Currently Amended) The invention of Claim 15 further including means for causing said reference beams beam and said received beams beam to interfere at an optically relayed aperture plane and thereby provide said holographic interference patterns pattern.

17. (Currently Amended) The invention of Claim 16 further including means for controlling the phase of said reference beams beam relative to said received beams beam.

18. (Currently Amended) The invention of Claim 17 further including means for controlling the phase of said reference beams beam relative to said received beams beam to compensate for nonlinear motion of said platform during a predetermined time interval.

19. (Currently Amended) The invention of Claim 11 further including means for reading said holographic interference patterns pattern.

20. (Currently Amended) The invention of Claim 10 wherein the first means includes is a focusing lens.

21. (Currently Amended) The invention of Claim 10 wherein said second means includes is a recording medium.

22. (Original) The invention of Claim 21 wherein said recording medium is a holographic recording medium.

23. (Original) The invention of Claim 22 wherein said holographic recording medium is re-recordable.

24. (Original) The invention of Claim 10 wherein said third means includes a scan mirror.

25. (Original) The invention of Claim 24 wherein said third means includes means for controlling said scan mirror.

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26. (Original) The invention of Claim 25 wherein said means for controlling includes a controller and said third means includes means for providing platform velocity information to said controller.

27. (Original) The invention of Claim 26 wherein said means for controlling further includes means for providing sensor line of sight information.

28. (Original) The invention of Claim 27 wherein said means for controlling includes means for compensating for target motion.

29. (Canceled)

30. (Currently Amended) A holographic synthetic aperture ladar system comprising:

a laser[,] mounted on a mobile platform and adapted to output a beam of coherent energy;

an optical arrangement mounted on said platform for directing said beam to a target and for receiving a reflection therefrom;

means for combining the reflection and a reference to form an interference pattern;

a scan mirror in optical alignment with said optical arrangement;

a holographic optical storage medium; and

a controller for directing said scan mirror to adjust a position of said interference pattern ~~reflection~~ on said medium in response to motion of said platform relative to said target.

31. (Currently Amended) An imaging method comprising the steps of:

receiving a beam of electromagnetic energy on a moving platform;

combining the received beam with an offset reference beam to form an interference pattern;

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~~recording the interference pattern an image provided by said beam, said step of recording an image including the step of continuously recording a relayed image of an aperture plane of an optical system; and~~

compensating said recorded interference pattern image for motion of said platform relative to an external reference.

32. - 36. (Canceled)

37. (New) An imaging system comprising:

first means mounted on a mobile platform for receiving electromagnetic energy reflected from a target; and

second means for combining the reflected energy with a reference beam of electromagnetic energy to reconstruct an image of the target without utilization of a vector spatial frequency parameter.

38. (New) An imaging system comprising:

first means mounted on a mobile platform for receiving electromagnetic energy reflected from a target; and

second means for combining the reflected energy with a reference beam of electromagnetic energy to reconstruct an image of the target without first decomposing the image of the target using a transformation.

39. (New) An imaging system comprising:

first means mounted on a mobile platform for receiving electromagnetic energy reflected from a target; and

second means for combining the reflected energy with a reference beam of electromagnetic energy to reconstruct an image of the target without integration over spatial frequency.

40. (New) An imaging system comprising:

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first means mounted on a mobile platform for receiving electromagnetic energy reflected from a target; and

second means for combining the reflected energy with a reference beam of electromagnetic energy to reconstruct an image of the target without use of a controller that extracts amplitude and phase of reflected electromagnetic energy.

41. (New) An imaging system comprising:

first means mounted on a mobile platform for receiving electromagnetic energy reflected from a target; and

second means for combining the reflected energy with a reference beam of electromagnetic energy to reconstruct an image of the target without use of a controller that controls amplitude, phase and spatial frequency of a synthesized optical wave pattern.

42. (New) An imaging system comprising:

first means mounted on a mobile platform for receiving electromagnetic energy reflected from a target; and

second means for combining the reflected energy with a reference beam of electromagnetic energy to reconstruct an image of the target without use of a basis function generator.

43. (New) The imaging system of Claim 1 wherein the second means includes a moveable scan mirror.

44. (New) The imaging system of Claim 1 wherein the second means includes a computer.